

CLAIMS

1. A guide route search device, the device comprising:

5        specification means for specifying a plurality of locations;

         calculation means for calculating an arrival time at each of the locations when successively visiting the locations in a certain via-sequence while avoiding  
10        passing through congested places and/or places which may be congested;

         judgment means for judging whether the calculated arrival time of each location matches an arrival time condition at each location; and

15        selection means for selecting the via-sequence where the judgment means has judged that the conditions are matched at all the locations specified, as a via-sequence of the guide route.

20        2. The guide route search device according to claim 1, wherein the calculation means comprises:

         determination means for determining a via-sequence of the specified plurality of via-locations;

         search means for searching a route between two  
25        consecutive locations in the via-sequence;

         re-search means for re-searching a route between the two locations when the searched route includes a congested place and/or a place which may be congested, so as to avoid the congested place and/or the place  
30        which may be congested; and

time calculation means for calculating an arrival  
time at each of the locations, either based on a travel  
time between the two locations of a route searched by  
the search means when the route searched by the search  
5 means does not include a congested place and/or a place  
which may be congested, or based on a travel time  
between the two locations of a route re-searched by the  
re-search means when the route searched by the search  
means includes a congested place and/or a place which  
10 may be congested.

3. A guide route search device, the device  
comprising:

specification means for specifying a plurality of  
15 locations;

determination means for determining a via-sequence  
of the specified plurality of via-locations;

search means for searching a route between two  
successive locations in the via-sequence;

20 first time calculation means for calculating an  
arrival time at each of the locations based on a travel  
time between the two locations in the route searched by  
the search means;

first judgment means for judging whether the  
25 arrival time of each location calculated by the first  
time calculation means matches an arrival time condition  
at each location;

re-search means for re-searching a route between  
the two locations when the route which has been judged  
30 by the first judgment means to match the arrival time

condition includes a congested place and/or a place which may be congested, so as to avoid the congested place and/or the place which may be congested;

second time calculation means for calculating an  
5 arrival time at each of the locations based on a travel time between the two locations in the route re-searched by the re-search means;

second judgment means for judging whether the arrival time at each location calculated by the second  
10 time calculation means matches the arrival time condition at each location; and

selection means for selecting as the via-sequence of a guide route a single via-sequence from the via-sequences where the first judgment means has judged that  
15 the conditions are matched at all the locations specified and which do not include congested places and/or places which may be congested, and from via-sequences where the second judgment means has judged that the conditions are matched at all the locations  
20 specified.

4. The guide route search device according to claim 3, wherein

the second time calculation means operates so as  
25 to generate arrival times for all the selected locations whenever a travel time between the two locations is computed, and

the judgment means operates so as to judge whether the arrival time of each location generated by the time  
30 calculation means matches the arrival time condition at

each location whenever a travel time between the two locations is computed.

5        5. The guide route search device according to claim 3, wherein

the first judgment means operates so as to judge whether the arrival time at each location calculated by the first time calculation means matches a guide time slot at each location;

10        the second judgment means operates so as to judge whether the arrival time at each location calculated by the second time calculation means matches a guide time slot at each location; and

the re-search means operates so as to re-search a  
15        route between the two locations in which the arrival times at a portion of or all of the locations are judged by the first judgment means to be earlier than the respective guide time slots thereof, and when the route includes congested places and/or places which may be  
20        congested for via-sequences where the arrival times of the remaining locations match the respective guide time slots thereof, re-searches a route between the two locations so as to avoid the congested places and/or the places which may be congested.

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6. A guide route search method, the method comprising the steps of:

specifying a plurality of locations;

calculating the arrival time at each of the  
30        locations when successively visiting the locations in a

certain via-sequence while avoiding passing through congested places and/or places which may be congested;

judging whether the calculated arrival time of each location matches the arrival time condition at each  
5 location; and

selecting the via-sequence where all the specified locations are judged to match arrival time conditions in the judgment step, as a guide via-sequence.

10 7. A computer program which causes a computer to execute the steps of:

specifying a plurality of locations;

calculating an arrival time at each of the locations when successively visiting the locations in a  
15 certain via-sequence while avoiding passing through congested places and/or places which may be congested;

judging whether the calculated arrival time of each location matches an arrival time condition at each location; and

20 selecting a via-sequence where all the specified locations are judged to match arrival time conditions in the judgment step, as a guide via-sequence.